



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,777	07/06/2001	Michael K. Brand	12177/21201	7690

7590 08/07/2006
KENYON & KENYON
One Broadway
New York, NY 10004

EXAMINER

GEBRESILASSIE, KIBROM K

ART UNIT PAPER NUMBER

2128

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

1. This action is responsive to the amended application filed on April 25, 2006.
2. Claims 10, and 20 are cancelled.
3. Claims 1-9, 11-19, 21, and 22 are examined.

Response to Arguments

4. Applicants arguments filed on April 25, 2006 have been fully considered but they are not persuasive.
 - a. Regarding applicants response to 112 (1) rejection: In the previous office action mailed on January 25, 2006, examiner rejected the expression of $t_F = AF \times t_A^2$ under 112, first paragraph as not providing enablement. To overcome the rejection, applicant suggested interpreting the expression as " $t_F(\text{second}) = AF \times t_A^2(\text{second})$ ". However, the interpretation suggested by applicant could not make the expression consistent. It is impossible to square the number and not square the unit. If the time is squared, it is well known that to square the number and the unit at the same time.
 - b. Regarding Applicants response to 112(2) rejection: Applicants amended claims 1, 21, and 22 to overcome 112, second paragraph rejection. The rejection is withdrawn in view of applicants amendment filed on April 25, 2006.
 - c. Regarding Applicants response to 101 rejection: Storing the software program on a machine-readable medium does not make the

Art Unit: 2128

invention statutory. In order a claim to be statutory, it should have a tangible result by itself. The claimed invention is directed to non-statutory subject matter, specifically there is no tangible result. The method and system of the claims only determine and calculate but produce no tangible result.

i. MPEP 2106 recites as follows:

Merely claiming nonfunctional descriptive material stored in a computer- readable medium does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application.

d. Regarding Applicant's response to 102(a) rejection:

ii. Regarding Claims 1, 21, and 22: Applicant's have argued

that the enclosed formula, $At = t_1/t_2$ where At is acceleration factor,

and t_1 and t_2 are Mean time to Failure, in prior art (ADI Reliability

Handbook) is linear. However, applicant's argument relating to

claims 1, 21, and 22 are not persuasive. It is clearly shown in the

prior art that the acceleration

factor, $At = t_1/t_2 = \exp.[-E_a/k (1/T_{TEST} - 1/T_{USE})]$ where T_{TEST} and T_{USE} are

Test Acceleration and Use Temperature in Kelvin, is an exponential

function which is equivalent to quadratic function.

Art Unit: 2128

Accordingly, the examiner maintains the 102(a) rejection of claims 1, 21, and 22.

iii. Regarding Claims 2-9, and 11-19:

No arguments were presented for the above-mentioned claims except that they inherit directly or indirectly from claims 1, 21, and 22. Applicant's argument filed on April 25, 2006 for claims 1, 21, and 22 have been fully considered but they are not persuasive as stated above. Hence rejections for claims 2-9, and 11-19 are maintained.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1-9, 11-19, 21, and 22 are rejected under 35 U.S.C. 102(a) as being anticipated by ADI Reliability Handbook, 2000.

As per Claim 1:

ADI Reliability Handbook teaches determining accelerated stress testing data for the product using the relationship $t_F = AF \times t_A^2$ (the formula can be rewrite as $AF = \frac{t_F}{t_A^2}$) the accelerated stress testing data representing the response of the

Art Unit: 2128

product operating in a first environment

(" , $At = \frac{t_1}{t_2} = \exp.[-\frac{E_a}{k} (\frac{1}{T_{TEST}} - \frac{1}{T_{USE}})]$ where T_{TEST} and T_{USE} are Test Acceleration

and Use Temperature in Kelvin, At is acceleration factor, and t_1 and t_2 are Mean time to Failure; and Page 8 Fig. 3)

Calculating the mean-time-between-failures for the operating in a second environment based on the accelerated stress testing data

("

Other terms include Mean Time to Failure (MTTF or MTBF) and useful life. MTTF is the time period over which a meaningful portion of the population will have failed. In the case of an exponential distribution with a constant failure rate, around 63% of the population will have failed by the $MTTF = 1/\lambda$.", page 10).

As per Claim 2:

ADI Reliability Handbook teaches first environment is more likely than the second environment to cause the product to fail

("

Applying these acceleration factors to the data above, the equivalent device hours at 55°C can be calculated for 125°C and 135°C.
", page 14; Table IV, page 14).

As per Claim 3:

ADI Reliability Handbook teaches the accelerated stress testing data represents the length of time the product operates in the first environment before the product to fail (table IV page 14, under column, "*Number Of Device Hrs. at Test Temp*").

As per Claim 4:

Art Unit: 2128

ADI Reliability Handbook teaches the accelerated stress testing data is derived from a plurality of different stress tests (*Autoclave, JEDEC-STD-22 Method A102 and A101, Temperature Humidity Bias HAST* etc; pages 17-20).

As per Claim 5:

ADI Reliability Handbook teaches the plurality of stress tests includes a temperature test ("*Temperature Cycle*" page 19, "*Thermal Shock*" page 20) and a vibration test (*ultrasonic vibration*; page 47, a paragraph starting with "*The Si nodules are formed...*" line 3).

As per Claim 6:

ADI Reliability Handbook teaches calculating upper and lower confidence limits for the MTPF calculation (on page 14, "*the confidence intervals normally used are 60% and 90% respectively*" and on page 15, "*At 60% C.I. $Fr = 1.27 \times 10^{-8}$; At 90% C.I. $Fr = 3.3 \times 10^{-8}$* ").

As per Claim 7:

ADI Reliability Handbook teaches accelerated stress-testing data is determined at least in part from BOM information on the product (*Device information: a complete FAIR form, reliability tracking sheet, or other form of documentation which details part type, serial number, date code, and manufacturing lot number*; page 61).

As per Claim 8:

ADI Reliability Handbook teaches step of calculating is performed during the design of the product ("*This is achieved through careful planning in the*

Art Unit: 2128

design phases of any new development or equipment instruction..." page 1, under title " ADI Reliability Charter" lines 4-6).

As per Claim 9:

ADI Reliability Handbook teaches step of calculating is performed prior to manufacturing the product for commercial use (page 9 under a title "*Product Reliability Stressing*" lines 1-5).

As per Claim 11:

ADI Reliability Handbook teaches the accelerated stress testing data includes accelerated stress testing data includes accelerated stress testing data for a pervious design of a product (page 6 under a title "*Release Phase*" the first paragraph lines 3-6).

As per Claim 12:

The limitation of claim 12 has already been discussed in the rejection of claims 2 and 11. It is therefore rejected under the same rationale.

As per Claim 13:

The limitation of claim 13 has already been discussed in the rejection of claims 1 and 11. It is therefore rejected under the same rationale.

7.

As per Claim 14:

ADI Reliability teaches step of calculating includes using the relationship $\text{EXP} \left[\frac{1}{k} \sum_{i=1}^k \ln \left(\frac{t_2^2}{t_1^2} \right) \right]$; and wherein t_1 = time to first failure during accelerated stress testing for pervious design of the product, and t_2 = time to first failure

Art Unit: 2128

during accelerated stress testing for the product

$$(At = t_1/t_2 = \exp.[-E_a/k (1/T_{TEST} - 1/T_{USE})]; \text{ page 11}).$$

As per Claim 15:

ADI Reliability Handbook teaches calculating a factor increase or decrease in the life of the product as compared to the life of the previous design of the product (page 6, paragraph one and two of "Release Phase").

As per Claim 16:

The limitation of claim 16 has already been discussed in the rejection of claim 4. It is therefore rejected under the same rationale.

As per Claim 17:

The limitation of claim 17 has already been discussed in the rejection of claim 5. It is therefore rejected under the same rationale.

As per Claim 18:

The limitation of claim 18 has already been discussed in the rejection of claim 8. It is therefore rejected under the same rationale.

As per Claim 19:

The limitation of claim 19 has already been discussed in the rejection of claim 9. It is therefore rejected under the same rationale.

As per Claim 21:

The limitation of claim 21 has already been discussed in the rejection of claims 1, 2, and 4. It is therefore rejected under the same rationale.

As per Claim 22:

Art Unit: 2128

The limitation of claim 22 has already been discussed in the rejection of claims 1, 2, and 7. It is therefore rejected under the same rationale.

Conclusion

8. Claims 1-9, 11-19, 21, and 22 are rejected.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

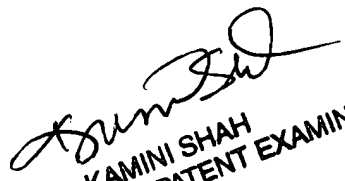
11. Any inquiring concerning this communication or earlier communication from the examiner should be directed to **Kibrom K. Gebresilassie** whose telephone number is **(571) 272-8571**. The examiner can normally be reached on **Monday-Friday, 8:30 am to 5:00 pm**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner **supervisor, Kamini shah** can be reached at **(571) 272-2279**. The official fax number is **(571) 273-8300**. Any inquiring of a general nature relating

Art Unit: 2128

to the status of this application should be directed to the **group receptionist**
whose telephone number is **(571) 272-3700**.

Kibrom K. Gebresilassie
Patent Examiner
U.S. Patent and Trademark Office
Simulation and Emulation, Art Unit 2128
401 Dulany St., Room 5C25 (Randolph)
Alexandria, VA 22314-5774
Tel: 571-272-8571
Kibrom.gebresilassie@uspto.gov


KAMINI SHAH
SUPERVISORY PATENT EXAMINER